

- Fig. 2. Ventral view of the skull of a young *Pygoscelis papua*, showing the unclosed sutures, the anterior basicranial fontanelle, and basi-temporal plate of the parasphenoid.
- Fig. 3. Lateral view of the outer side of the skull; note especially the great distinctness of the squamosal, the prootic and epiotic, the parasphenoid, and the hemipterygoid.
- Fig. 4. Skull of a nestling *Catarrhactes* seen from behind. To show the paired supra-occipital, the exoccipital, and epiotic.
- Fig. 5. Pygostyle of a nestling *Catarrhactes chrysocome*, showing the separate vertebræ, which later fuse and make up the "pygostyle."

3. Note on an Anthropoid Ape. By W. L. H. DUCKWORTH, M.A., Fellow of Jesus College, Cambridge.

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The specimen under consideration, which is an aged female, was shipped to this country from the Gaboon River, West Coast of Africa. In placing on record the results of the dissection of this anthropomorphous ape, I am met with the difficulty of being unable to refer to it with confidence as either a true Champanzee (*Anthropopithecus troglodytes*) or a genuine Gorilla (*A. gorilla*).

In a communication to the section of General Zoology at the International Congress recently held at Cambridge, I was able only to mention the difficulty, and time did not allow of any discussion on the subject. I have therefore ventured to return to this in rather greater detail, and hope that I may be favoured with some advice thereupon.

I turn at once to the characters of our specimen, and, to summarize these characters in the briefest manner, would note the general size and bulk (stature nearly 1200 mm.). The loss, consequent on the inadequate method of preservation employed, of almost all the hair, shows that the colour of the skin is grey, with black patches where the epidermis is retained, the face and the dorsal aspects of digits being of the latter colour. The hip- and knee-joints are much more extensible than in most specimens of the Anthropoid Apes; the limbs and extremities are distinctly slender.

The ears are remarkably asymmetrical, the upper half of the right ear being absent. This is probably the result of a bite; a similar condition is present (on the same side) in a Chimpanzee in the Zoological Museum at Leipzig.

On its arrival the specimen was thought to be a female Gorilla, the principal reasons, so far as I can ascertain, for the opinion being the facts of its great bulk and the dark colour of the face and extremities. But from the first time I saw it, I have had misgivings about the correctness of this view, and these up to a certain point have been strengthened by further observations.

These doubts were raised by the following features presented by the specimen:—

1. The large size of the ear.—Gorillas have usually small ears.
2. The comparative lack of supra-orbital prominence.—This is marked even in female Gorillas.

3. The comparative breadth of the interorbital space ; which is great when compared to that of many Gorillas.
4. Characters of the upper lip : the great distance from the base of the septum nasi to the margin of the lip ; and the absence of the median furrow which is so marked in many Gorillas.
5. The slenderness and narrowness of hand and foot.
6. The relatively great development of pollex and hallux.
7. The small size of the teeth ; these are much worn, the third molars the least ; there are indications that, originally, four cusps were present in the upper molars. As regards the lower molars, those of the third pair show comparatively little wear, and have three large and two subsidiary cusps.
The average transverse diameter of the crowns of the molar teeth is 10·4 mm. as against 14 mm., which is the corresponding average in the skull (at Cambridge) of an undoubted female Gorilla. [*Cf.* Table I. *infra.*]
8. Muscular system. A plantaris muscle is present in the right lower extremity. I cannot find any record of this in a Gorilla up to the present.

TABLE I.—*Dimensions of Teeth* (in millim.).

Molar.		"A."		Gorilla, ♀. Skull at Cambridge.	
		A.P.	T.	A.P.	T.
Upper	1 R.	9·5	10·5	12	13·5
	2 "		12	14	
	3 "		10·5	13	14
	1 L.	10	10	12	14
	2 "		11	15	15
	3 "		10·5	15	14·5
Lower	1 R.		9·5	12	?
	2 "		11	15	14
	3 "		9·5	17	14·5
	1 L.		9·5	12·5	12·5
	2 "		11	15·5	14
	3 "		10	17	14

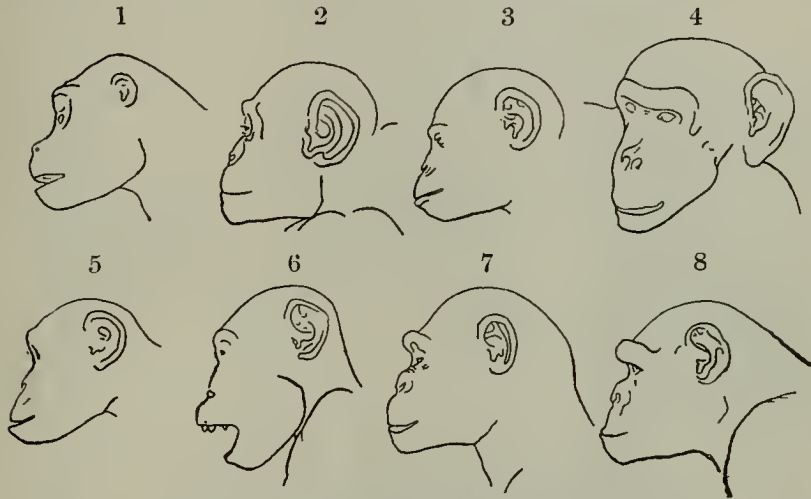
A.P. = Antero-posterior, T. = Transverse diameter of crown of molar.

These are the principal points to which one refers in attempting to assign the creature to a recognized species ; and, in my opinion, they indicate that this specimen is more correctly designated a Chimpanzee than a Gorilla. The hair is so scanty as to afford no reliable evidence on the subject.

I have been led from this case to collect some illustrations and descriptions of some of the Anthropoid Apes which have in former years presented difficulties when the determination of their species for descriptive purposes came into question.

The accompanying diagram (p. 991), in which, however, the

outlines are carefully traced from photographs, will serve to recall some of those specimens. I would direct somewhat special notice to the representation of "Johanna," the large ape at Messrs. Barnum and Bailey's World's Show. I have made some measurements of this animal, and hope to be permitted to communicate them at a future meeting.



Outline tracings of the heads of various Apes.

- No. 1. Head of a female Gorilla, a stuffed specimen in the Natural History Museum at Hamburg.
- No. 2. Head of a Chimpanzee with ears of considerable size.
- No. 3. Head of a Chimpanzee with smaller ears.
- No. 4. Head of Johanna: from a photograph of the living animal.
- No. 5. Head of the Ape "A," at Cambridge.
- No. 6. Head of Aubry's Chimpanzee: from the illustration in the original memoir, 'Nouvelles Archives du Muséum.'
- No. 7. Head of an Ape described by Hartmann in the 'Archiv für Anatomie,' 1876. In Hartmann's paper it appears as No. 1 in the illustrations, and is therefore referred to as Hartmann's example No. 1. The figures Nos. 2 & 3 of the present illustration are taken from the same communication by Hartmann.
- No. 8. Head of Mafuka: from Mützel's drawing.

In studying the creatures represented in the diagram, I paid special attention to certain facial features, and in fact, with two exceptions (Nos. 3 & 4), all the examples are drawn to scale in such a way that the facial length is constant throughout the series—a method of illustration which possesses obvious advantages in enabling comparisons to be made. The variety of profile met with in these animals is the principal point illustrated by this diagram.

I next proceeded to consider measurements of the face and ears, the data being represented in Table II. (p. 992) and being provided by records (in the cases of specimens "Au.," "Maf.," "Lüb. H.," "Lüb. W.," and "Den."), by spirit-specimens (viz., "B," "A," "Cy," "Cr," "H," "F," all at Cambridge), by "Johanna," and by a stuffed specimen at Hamburg ("Hamb.").

TABLE II.—Measurements (in millim.).

	Specimens.												
	♂ "B."	♀ "A."	♀ "Au."	♀ "Joh."	♀ "Maf."	♀ "Hamb."	♀ "Lüb.H."	♀ "Lüb.W."	♂ "Cy."	♂ "H."	♂ "Cr."	♂ "F."	♀ "Den."
Sex	♂	♀	♀	♀	♀	♀	♀	♀	♂	♂	♂	♂	♀
Supra-orbital ridge to lip-margin	62	118	104	(12.5)	...	...	...	...	130	72	65	12	23.5
Lowest part of septum nasi to lip-margin	22	42	40	(6)	...	...	...	...	30	15	13	3	8
Upper labial index = Index 1	35.5	35.6	38.4	(48)	? 38	...	...	...	23	20.8	20	25	34
Interlacrymal diameter	20	31	34	(5.5)	...	...	...	...	34	21	15	6	12
Rictus oculi	15	23	23	(3.25)	...	...	...	...	35	21	17	6	11
Interorbital index = Index 2	40	40.3	42.5	(45.8)	? 46	...	...	...	33.6	33.3	30.6	33.3	35.3
Ear: breadth	48	48	50	55	45	33	? 30	? 28	34	32	31	3.5	10
Ear: height	62	71	68	60	70	47	? 43	? 38	51	47	41	6	16
Superficies of Ear as represented by the } product of Breadth and Height	2976	3408	3400	3300	3150	1551	1290	? 1064	1734	1504	1271	21	160

"B." Chimpanzee, Cambr. "A." The specimen described herein, Cambr. "Au." Aubry's Chimpanzee. "Joh." Johanna. "Maf." Mafuka. "Hamb." Gorilla ♀, Hamburg. "Lüb. H." Gorilla ♀, Lübeck. "Lüb. W." Gorilla ♀, Lübeck. "Cy." Gorilla ♂, Cambr. "H." Gorilla ♂, Cambr. "Cr." Gorilla ♂, Cambr. "F." Gorilla fetus, Deniker. The last eight of these are undoubted Gorillas, "H." & "Cr." being immature. From "Johanna" only the ear measurements could be obtained directly, the others are taken from a photograph.

The features more specially observed were:—the total facial length and the part contributed to it by the upper lip; the inter-orbital and biorbital diameters, and the dimensions of the ears. Of these dimensions I have constructed indices (Tab. II.); and a comparison of the members of this group as arranged in the numerical order of the indices is here presented (Tab. III.).

TABLE III.—*Specimens in Numerical Order.*

Index 1.	Index 2.	Superficies auris.
"Johanna."	"Johanna."	Cambr. specimen "A."
Aubry's Chimpanzee.	Aubry's Chimpanzee.	Aubry's Chimpanzee.
Cambridge specimen "A."	Cambridge specimen "A."	"Johanna."
Chimpanzee "B."	Chimpanzee "B."	"Mafuka."
Deniker's Gorilla.	Deniker's Gorilla.	Chimpanzee "B."
Cambridge Gorilla "F."	Cambr. Gorilla "Cy."	Cambr. Gorilla "Cy."
" " "Cy."	" " "H."	Hamburg Gorilla.
" " "H."	" " "F."	Cambr. Gorilla "H."
" " "Cr."	" " "Cr."	(? Lübeck Gorilla "H.")
		Cambr. Gorilla "Cr."
		(? Lübeck Gorilla "W.")

$$\text{Index 1. } \frac{\text{Height of upper lip} \times 100}{\text{Distance supra-orb. crest to lip-margin}}$$

$$\text{Index 2. } \frac{\text{Interorbital diameter} \times 100}{\text{External biorbital diameter}}$$

Thus arranged, it is to be observed that the Chimpanzee-like or "intermediate" apes keep on the whole fairly closely together and away from the genuine Gorillas that I have been able to measure—the Chimpanzees furnishing the higher, and the Gorillas the lower terms of the series in the case of each index.

In these respects, too, the position of "A" is evidently rather with the Chimpanzees than with the Gorillas.

In the last table (Tab. IV.) I have presented some other

TABLE IV.

	"A."	Cy.	H.	Cr.	"Joh."
Sitting height	737	836	?	340	830
Palmar breadth	76	106	56	48	?
Pollex	60	24	22	17	?
Hallux	75	71	47	22	?
Length of pes	240	282	142	110	235
" humerus	293	360	170	128	270
" radius	252	345	175	115	305
" femur	260	290	? 175	90	360
" tibia.....	250	270	140	94	260
Index—Radio-humeral ...	85.3	95.8	102.9	89.8	? 112.8
" Tibio-femoral ...	96.0	93.1	? 80	104.5	72.3
" Humero-femoral.	112.7	124.1	? 97.1	142.3	75
" Intermembral ...	107	125.9	? 109.2	132.1	92.7

dimensions (in millim.) of the Ape "A," together with the corresponding figures relating to three undoubted Gorillas at Cambridge, two of which, however, are immature. And I have added the corresponding figures for "Johanna" for the sake of comparison. Three indices show marked contrasts between "A" and undoubted Gorillas.

In comparing "A" with undoubted Gorillas, one may also specially remark the palmar breadth: this is very much less than in a Gorilla at Cambridge of rather greater size, viz. "Cy," whereas the pollex in "A" is much longer than in this Gorilla.

After ascertaining, however, that, from evidence supplied by teeth, by facial features, and by the extremities, our specimen "A," while in some respects intermediate, yet resembles the Chimpanzee rather than the Gorilla, it is not encouraging to find Hartmann in 1876, after an extended series of observations, pronouncing on none of these characters as really of specific import. Thus he states¹, for instance, that whereas in Chimpanzees large ears are the rule, yet individuals with small ears are not unknown, and in fact he illustrates this (see fig. 3, p. 991); whereas again in Gorillas, though small ears are usual, one sometimes finds examples in which these appendages are of large size.

But yet on finding the coincidence of so many characteristics of Chimpanzee as in this animal, one may well be excused hesitation in continuing to regard the specimen as a Gorilla.

However, it can hardly be described as an ordinary example of *Anthropopithecus troglodytes*; and I am inclined to think, in the absence of contradictory evidence, that we have here a specimen of Du Chaillu's Kooloo-Kamba. Its great size gives it some claim to an intermediate position between *A. troglodytes* and *A. gorilla*.

But if an intermediate form, it differs appreciably from members of another group of intermediate forms which we may call the Mafuka group, and which is constituted by Mafuka, Johanna, and Hartmann's example No. 1 (*cf.* fig. 7, p. 991).

4. On the Turbinolid and Oculinoid Corals collected by the Author in the South Pacific². By J. STANLEY GARDINER, M.A., Gonville and Caius College, Cambridge.

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(Plate LXII.)

Genus RHIZOTROCHUS.

Rhizotrochus, Milne-Edwards & Haime, Cor. ii. p. 97.

In dredging on the outer slopes of the reef at Funafuti I never obtained any solitary corals. Mr. Hedley, however, found one

¹ Zeitschrift für Ethnologie, 1876.

² Communicated by W. BATESON, F.Z.S. For previous papers on the Corals, see P. Z. S. 1897, p. 941, and 1898, pp. 257, 525.